

Maricopa County Department of Transportation

2003 Bridge Management System Report



Transportation Planning Division
Program & Systems Analysis

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MCDOT BRIDGE MANAGEMENT SYSTEM

The Maricopa County Department of Transportation (MCDOT) is currently responsible for maintaining 366 bridges and structures (box culverts) as well as planning for the design and construction of new bridges and structures. MCDOT has standardized its evaluation and prioritization of bridge projects within the County. This process is now the basis for MCDOT's bridge project recommendations for the County's five-year Transportation Improvement Program as well as a long-term planning tool for future funding of bridge construction projects. Beginning in 1999, MCDOT continues to focus on its bridge resources on scour protection projects. This scour protection mitigation will ultimately save possible future long traffic disruptions and costly bridge repair or replacement.

BACKGROUND

MCDOT has 259 on-system bridges (bridges and box culverts 20 feet or longer) and 107 off-system structures (box culverts and structures shorter than 20 feet) inspected on a biannual basis. In keeping with Federal requirements, the record of these inspections is forwarded to the ADOT's Bridge Management Group by April of each year. The State Bridge Inventory System (SBIS), which MCDOT and Arizona Department of Transportation (ADOT) use, is a combination of three databases: the inventory database, the inspection database, and a maintenance database. Since it takes two years for MCDOT to inspect its entire bridge inventory, total inventory comparisons will be analyzed in even years beginning in 2000.

It is important to understand that the SBIS is only an inventory database and not a management system. In 1993, MCDOT participated as a member of the Bridge Management System ISTEATechnical Committee. This was a statewide team chaired by ADOT to form guidelines and procedures for the implementation of PONTIS, a Bridge Management System. MCDOT continues to gather the necessary inspection data for input into PONTIS. MCDOT will benefit from ADOT's efforts to implement this system, since MCDOT's bridge database is a subset of ADOT's statewide database. ADOT continues to formulate guidelines and procedures for implementation of PONTIS. Once this task is complete and PONTIS fully operational, MCDOT will request ADOT to download information from PONTIS. Full implementation of PONTIS is anticipated by 2005 and will be used for bridges and structures over 20-feet in length.

DATA GATHERING AND ANALYSIS

Definition of Bridge and Bridge Types

In accordance with the American Association of State Highway and Transportation Officials (AASHTO) Transportation Glossary, a "bridge" is defined as "a structure including supports erected over a depression or an obstruction, such as water, highway, or railway, and having a track or passageway for carrying traffic or other

moving loads, and having an opening measured along the center of the roadway of more than 20 feet between under copings of abutments or spring lines of arches, or extreme ends of openings for multiple boxes; it may also include multiple pipes, where the clear distance between openings is less than half of the smaller contiguous opening.” There are five basic types of bridges classified according to the manner in which the load is supported.

- Beam
- Arch
- Truss
- Cable – Supported
- Frame

EVALUATION CRITERIA

In 1997 the Maricopa County Bridge Investment Study (BIS) recognized the need to evaluate bridges separately from roadway projects. The following information identifies MCDOT’s method of scoring and prioritizing bridge projects. In discussions with then County Bridge Engineer, four categories of bridge projects were chosen for evaluation and prioritization:

- Rehabilitation Projects
- Replacement Projects
- Replace Dip Sections with New Structures
- New Bridge Projects (not included in major road projects)

REHABILITATION PROJECTS

The rehabilitation of a bridge includes restoring or improving its original load carrying capacity and/or increasing its roadway clear width to provide for traffic or pedestrian use. In the past, MCDOT used a procedure based only on the sufficiency rating of the existing bridge and judgment of the Bridge Engineer to recommend bridge rehabilitation projects. In the quest for a more formal evaluation and prioritization procedure, use of the sufficiency rating will continue along with other factors.

MCDOT will continue to use the sufficiency rating because it is readily obtainable, updated every two years, and has been the foundation of other agencies. Federal Highway Administration (FHWA) publication *Bridge Inspector’s Training Manual/90* explains the Sufficiency Rating as the following: The calculation of a bridge sufficiency rating is based on an empirical formula by National Bridge Inspection Standards (NBIS) which assigns points on the basis of approximately 19 separate Structure Inventory and Appraisal items. The sufficiency rating consists of the

following factors and weighting criteria:

Structural Condition	=	55.0%
Serviceability	=	14.0%
Functionality	=	13.0%
ADT	=	11.5%
Detour Length (Less than 37 miles)	=	<u>06.5%</u>
		100%

Special Reductions to Sufficiency Rating

Public inconvenience amounts to only 6.5 percent for a detour length up to 37 miles. An additional 5.0 percent penalty is applied for detour length between 37 and 99 miles. Detours beyond 99 miles are treated as if the length were 99 miles. A new major bridge (Thru Truss, Arch, Suspension, Cable-Stayed or Movable) is penalized 5 percent. Therefore the maximum sufficiency rating for these types of new bridges would be 95 percent. Lack of traffic safety features (bridge railings, transitions, approach guardrail, and approach guardrail ends) results in only a 3 percent penalty. Accidents on a bridge are not considered in the sufficiency rating calculation. The Sufficiency Rating only indicates the bridge's sufficiency to remain in service. If the sufficiency rating was used as the only evaluation criteria the following conclusions could be drawn:

A bridge could have a rating of 18-82 based solely on its structural condition, serviceability and functionality without regard to its use or size. It could receive Federal replacement funds or be 3 points from being eligible for rehabilitation funds. (Bridges scoring below 80 are eligible for rehabilitation funds, while bridges scoring below 50 are eligible for replacement funds.)

No consideration is given to the remaining useful life of the structure.

No consideration is given to the cost of rehabilitation or the associated benefits.

Two or more bridges could have the same sufficiency rating. There would be no way to prioritize without additional factors.

For these reasons, in order to evaluate and prioritize rehabilitation projects, other factors are considered in order for the County to decide how to maximize their expenditure of dollars. The following additional factors are used. Beginning with the 2002 BMS, MCDOT will add Structural Safety to the following list. This will require re-evaluation and modification to the current 100 point scoring system.

- Sufficiency Rating
- Inventory Rating (Structural Safety)
- Functional Obsolescence
- Load Limits

- Traffic Safety on or Near the Bridge
- Hydraulics
- Remaining Useful Life
- Average Daily Traffic
- Public Inconvenience - Emergency Use
- Benefit/Cost Ratio

Using these evaluation factors, a 100 point scoring system is used and explained as follows:

Inventory Rating:	=	(10 points)
Sufficiency Rating:	=	(10 points)
Functional Obsolescence:	=	(5 points)
Load Limited:	=	(5 points)
Traffic Safety (2 parts):	=	(15 points)
A. Accident Rate (5 points)		
B. Accident Severity (10 points)		
Hydraulics:	=	(10 points)
Remaining Useful Life:	=	(10 points)
Average Daily Traffic:	=	(15 points)
Public Inconvenience - Emergency Use:	=	(10 points)
Benefit/Cost Ratio:	=	(10 points)
		<hr/> 100 Points

Overall Scoring System

The overall scoring system can also be viewed by looking at elements of each of the evaluation factors for total weighting of each evaluation criteria.

Total Weighting of Evaluation Criteria

Weighting Evaluation Criteria		Weight		
Structural Condition	Sufficiency Rating (.55 x 15)	8.2		
	Load Limit	5.0		
	Remaining Useful Life	10.0		
			Total	23.2
Serviceability	Sufficiency Rating (.14 x 15)	2.1		
			Total	2.1
Functionality	Sufficiency Rating (.13 x 15)	2.0		
	Functional Obsolescence	5.0		
			Total	7.0
ADT	Sufficiency Rating (.115 x 15)	1.7		
	ADT	15.0		
			Total	16.7
Public Inconvenience	Sufficiency Rating (Detour Length) (.065 x 15)	1.0		
	Public Inconvenience	10.0		
			Total	11.0
Traffic Safety	Traffic Safety	15.0		
			Total	15.0
Hydraulics	Hydraulics	10.0		
			Total	10.0
Benefit/Cost	Benefit/Cost	15.0		
			Total	15.0
		Grand Total		100.0

REPLACEMENT OF EXISTING BRIDGES

Funding availability for bridge rehabilitation projects are often time limited. Therefore it is very important to implement a rehabilitation project that will give the best return of the dollars spent. Replacement of a bridge may cost several times more than the cost to rehabilitate, but a new bridge if properly designed and constructed will last longer than a rehabilitated bridge. Therefore, the cost to rehabilitate should be carefully considered and estimated.

In addition, other items such as the bridge's functionality, sufficiency rating and the bridge engineer's judgment should be considered before replacement of an existing structure. MCDOT recommends replacement of an existing bridge should be considered when all four of the following conditions are met:

1. If the cost of rehabilitation is 55% of the cost of a new bridge and,

2. The existing bridge is classified as functionally obsolete and,
3. The sufficiency rating of the existing bridge is less than 50 and,
4. The judgment of the Bridge Engineer

Prioritization of two or more identical bridge replacement projects are based solely on their benefit/cost ratio.

REPLACEMENT OF DIP SECTION WITH A NEW STRUCTURE

When considering the replacement of dip sections, the most important factors were determined to be detour length and ADT, number of days the road is closed, accident rate and severity, future traffic congestion and benefit/cost ratio. The following criteria is used to evaluate and prioritize the replacement of dip sections with new structures, and is based on a 100 point scoring system, which is explained as follows:

The first two elements (detour length and road closure) are used due to their affect on public inconvenience (i.e. road user value of time and additional vehicle cost).

Detour Length:	=	(15 points)
Road Closures:	=	(25 points)
Future Volume to Capacity Ratio:	=	(30 points)
Traffic Safety (2 parts):	=	(15 points)
A. Accident Rate (5 points)		
B. Accident Severity (10 points)		
Benefit/Cost Ratio:	=	(15 points)
		<hr/>
		100 Points

SCOUR PROTECTION PROJECTS

NEW BRIDGE PROJECTS

Scour protection projects have been a MCDOT priority since 1997. The first phase of MCDOT's scour program began in 1997. An initial study was conducted to determine the bridges and structures with scour problems. The second phase included design of scour mitigation. This began in 1998. The third and final phase is construction. This began in 1999 and will continue through 2005. Scour critical bridges have been targeted for mitigation to help prevent costly rehabilitation or replacement prior to the remaining life expectancy of the facility. In 1997 there were 10 bridges determined to be scour critical. Since then MCDOT has completed six of the 10 projects. One project, the Power Road Bridge at Queen Creek is currently under construction, and another project, MC85 at the Agua Fria River is structurally deficient and will need repairs in FY 2003. The remaining two projects, due to TIP

project reprioritization, have been delayed to fiscal years 2004 and 2005. These two projects are:

Old US80 at the Hassayampa River
Tuthill Road Bridge at the Gila River

The six completed Scour Protection Projects were:

51st Avenue Bridge at the Salt River
Deer Valley Road Bridge at an unnamed wash near 189th Avenue (alignment)
Bush Highway Bridge at the Salt River
Rittenhouse Road Bridge at the Queen Creek Wash
Indian School Road Bridge at the Agua Fria River
Carefree Highway Bridge at the Cave Creek Wash

NEW BRIDGE ADDITIONS

New Bridge Projects

Since FY 2001, three new bridges been added to MCDOT's inspection inventory. They are:

Clearview Road on Loop 303 (Estrella Freeway)
Mountain View Road on Loop 303 (Estrella Freeway)
Loop 303 Grade Separation over Grand Avenue

New bridge projects are projects that require the installation of a bridge and approaches where none currently exist and the bridge is not included in a major road project. The most important consideration for this type of project is the benefit/cost ratio. Additional consideration should be given if the new bridge fits with the regional transportation system plan, funding sponsorship, and accommodates the projected congestion once the facility is in place. The following four criteria are used to evaluate and prioritize new bridge projects not included as part of a major road project. It is based on a 100 point scoring system.

Benefit/Cost Ratio:	=	(50 points)
Transportation System Plan:	=	(15 points)
Joint Sponsorship (2 part):	=	(15 points)
Local Partnership Contributions	=	(10 points)
Incl. in a Local Capital Improvement Program	=	(5 points)
Future Volume to Capacity Ratio:	=	<u>(20 points)</u>
		100 Points

RECOMMENDATIONS FOR TIP PROGRAMMING PROCEDURES

Each year, MCDOT reviews the highest rated bridge projects from the following subcategories as previously described:

TIP Projects

Replacement of Existing Bridges

Replace Dip Sections with New Structures

New Bridge Projects (not included in major road projects)

Operation/Maintenance Projects

Bridge Rehabilitation Projects

In any given year, the budget allocation may not support inclusion of all top rated bridge projects in the TIP Program. When this occurs decisions are made based on the rating criteria and professional engineering judgment.

RECOMMENDED BRIDGE MANAGEMENT SYSTEM (BMS) MODIFICATIONS

Since MCDOT has decided to let ADOT rather than MCDOT implement PONTIS, no additional modifications to the bridge analysis process are anticipated. MCDOT will continue to gather the necessary inspection data but will not proceed as a separate entity in implementation of the PONTIS bridge management system. MCDOT will benefit from ADOT's extensive efforts to implement this system and to provide the critical analysis results regarding MCDOT's bridges. Use of ADOT's PONTIS expertise should satisfy FHWA in the event they require all agencies responsible for bridges to have an operating BMS before Federal funds will be allocated for repair, rehabilitation or replacement of bridges.

CURRENT STATUS OF MCDOT'S BRIDGE MANAGEMENT SYSTEM

MCDOT currently has all bridge elements inventoried and recorded into the State Bridge Inventory System (SBIS). The NBIS database, as of March 1997, was imported into PONTIS.

NEW ADDITION TO MCDOT'S BRIDGE MANAGEMENT SYSTEM

Beginning in 2000, MCDOT began an Asset Management program for its bridge inventory. A replacement value has been established for each bridge and structure. This value will have a straight-line depreciation value based on the total life expectancy of the facility. For example, if a bridge has a life expectancy of 75 years, each year the value of the bridge will be reduced by 1/75 of its original construction cost. In 2002, MCDOT's bridge and structure inventory asset valuation is estimated at \$166,539,964. Table 1 below is a tabular recount of this information.

TABLE 1: Bridge Replacement Values

	Replacement Value			Remaining Life in Years		
	Culverts <20' Wide	Culverts >=20' Wide	Bridges	Culverts <20' Wide	Culverts >=20' Wide	Bridges
Total:	\$5,235,254	\$33,902,640	\$86,701,469			
Average:	\$48,030	\$224,521	\$833,668	54	59	91
Max:	\$218,239	\$1,431,091	\$10,277,341	74	74	148
Min:						

	Replacement Value	Remaining Value
Average Structure Value:	\$457,527	\$346,655
Total Structure Value:	\$166,539,964	\$125,835,649

2002 BRIDGE INVENTORY HIGHLIGHTS**Bridge Inventory Modifications**

In 2002, MCDOT's bridge inventory consists of 259 bridges and 107 other structures. Three new bridges were added to the inventory and one new structure was added. No bridges were removed from the inventory due to annexations.

Federal Funding Eligibility Comparisons:

In 2001 MCDOT identified 70 bridges and/or structures eligible for federal rehabilitation funds and one bridge or structure eligible for federal replacement funds. In 2002, 108 bridges and/or structures are eligible for federal rehabilitation funds and two bridges are eligible for federal replacement funds. This rise in the number of bridges and structures eligible for federal rehabilitation funds is due to 81 structures along the Sun Valley Parkway that have a sufficiency rating of below 80. It appears that all Sun Valley structures sufficiency ratings have now stabilized and for the most part will show no or slight (acceptable) decreases in yearly sufficiency rating. MCDOT continues to monitor the Sun Valley structures.

Potential Federal Fund Projects vs. Overall MCDOT Inventory:

In 2001 the percentage of bridges and/or structures eligible for federal funds was 19.7%. In 2002 the percentage increased to 29.5%. Again, this increase is attributable to the number of structures along the Sun Valley Parkway. Without these structures the percentage of bridges and/or structures eligible for federal funds would have been 5.7%. This continues to suggest that based on the current inspection data, the vast majority of bridges and/or structures in Maricopa County are still in excellent condition.

NOTABLE 2002 BRIDGE EVENTS

In fiscal year 2002, during a routine bridge inspection, the MC85 Bridge at the Agua Fria River was found to be structurally deficient. This bridge has been in service for over 30 years and is determined to be dangerously overstressed. This bridge was given to MCDOT when ADOT abandoned State Route 85 back to the County. This bridge was closed to traffic during January and February of 2002 until temporary supports could be secured thus allowing it to be reopened to the public. While this “temporary fix” provides a safe bridge, it is imperative that a permanent solution be found and repairs begin soon. In Fiscal 2004 this bridge is scheduled for scour protection. The temporary supports may interfere with the scour protection; therefore a permanent fix must be completed prior to scour protection. Another notable event will be the repair of the bearing devices on the Gillespie Dam Bridge. Again, routine inspection revealed that the bearing rollers are out of alignment, probably due to temperature variations inducing stresses of unknown magnitude in the top and bottom chords of the bridge. The Gillespie Dam Bridge is our only bridge currently listed in the National Register of Historic Places (NRHP).

Another notable event is the annexation of a portion of a bridge or structure. Since our last Bridge Management System report there have been 12 bridges or structures partially annexed by municipalities. Numerous times municipalities will annex to the centerline of the roads without consideration to any bridge or structure that may exist across the road. While this style of annexation does not pose an undue burden on the maintenance of the road, it does pose a possible significant problem with the bridges or structures. MCDOT will begin communicating with the appropriate municipalities to remedy this situation.

Notable Sufficiency Rating Changes to MCDOT’s Bridges and Structures

There were 32 notable sufficiency-rating changes (declines > than 5 points or increases < than 5 points) in individual facilities since their last review. Twenty of the facilities were along the Sun Valley Parkway and was attributable to erroneous data in the inventory. Table 2, below will be used to track the 87 structures along the Sun Valley Parkway. The structures without sufficiency rates have missing information or are new structures in the inventory and will be corrected during the next inspection cycle.

Status of the Structures along the Sun Valley Parkway

MCDOT will continue to monitor the structures along the Sun Valley Parkway. In 2002, of the 87 structures, 46 experienced no sufficiency rate change, 21 experienced moderate sufficiency rate change (deterioration of -2.01 to -4.09 points), three experienced significant sufficiency rate change (deterioration of -8.68 to -10.64 points), and 17 experienced an extensive sufficiency rate change (deterioration of -18.41 points). This large sufficiency rate change was attributed to previous inaccurate inventory data. Please keep in mind that the mere drop in sufficiency rating, because of

the multitude of components included in calculating a sufficiency rating, does not necessarily constitute a need for immediate remedial action. Therefore, after each inspection cycle the Bridge Engineer or his designee pays specific attention to all facilities that have a decrease in sufficiency rating to determine what component(s) were involved. Remedial action will be taken when and as necessary. Table 2 below is a tabular recount of this information:

TABLE 2: Structures Along the Sun Valley Parkway

STRUCT #	FEATURES	FACILITY	SUFF RATE 02	SUFF RATE 01	SUFF CHANGE	YEAR CONST
7645	Wash	Sun Valley Pkwy-01	77.51	80.54	-3.03	1989
7646	Wash	Sun Valley Pkwy-02	77.51	80.54	-3.03	1989
7647	Wash	Sun Valley Pkwy-03	76.45	79.52	-3.07	1989
7648	Wash	Sun Valley Pkwy-04	77.51	80.54	-3.03	1989
7649	Wash	Sun Valley Pkwy-05	77.51	87.13	-9.62	1989
7650	Wash	Sun Valley Pkwy-06	78.45	87.13	-8.68	1989
7651	Wash	Sun Valley Pkwy-07	77.51	80.54	-3.03	1989
7652	Wash	Sun Valley Pkwy-08	77.51	79.52	-2.01	1989
7653	Wash	Sun Valley Pkwy-09	77.51	80.54	-3.03	1989
990134	Wash	Sun Valley Pkwy-10	77.51	95.92	-18.41	1989
7654	Wash	Sun Valley Pkwy-11	77.51	80.54	-3.03	1989
7655	Wash	Sun Valley Pkwy-12	77.51	80.54	-3.03	1989
7656	Wash	Sun Valley Pkwy-13	77.51	80.54	-3.03	1989
990135	Wash	Sun Valley Pkwy-14	77.51	95.92	-18.41	1989
990136	Wash	Sun Valley Pkwy-15	77.51	95.92	-18.41	1989
7657	Wash	Sun Valley Pkwy-16	77.51	80.54	-3.03	1989
7658	Wash	Sun Valley Pkwy-17	77.51	80.54	-3.03	1989
7659	Wash	Sun Valley Pkwy-18	77.51	79.52	-2.01	1989
990137	Wash	Sun Valley Pkwy-19	77.51	95.92	-18.41	1989
990138	Wash	Sun Valley Pkwy-20	77.51	95.92	-18.41	1989
7660	Wash	Sun Valley Pkwy-21	77.51	80.54	-3.03	1989

STRUCT #	FEATURES	FACILITY	SUFF RATE 02	SUFF RATE 01	SUFF CHANGE	YEAR CONST
7661	Wash	Sun Valley Pkwy-22	77.51	80.54	-3.03	1989
990139	Wash	Sun Valley Pkwy-23	77.51	95.92	-18.41	1989
7662	Wash	Sun Valley Pkwy-24	77.51	88.15	-10.64	1989
7663	Wash	Sun Valley Pkwy-25	77.51	80.54	-3.03	1989
990140	Wash	Sun Valley Pkwy-26	77.51	95.92	-18.41	1989
990141	Wash	Sun Valley Pkwy-27	77.51	95.92	-18.41	1989
990142	Wash	Sun Valley Pkwy-28	77.51	95.92	-18.41	1989
990143	Wash	Sun Valley Pkwy-29	77.51	95.92	-18.41	1989
990144	Wash	Sun Valley Pkwy-30	77.51	95.92	-18.41	1989
990145	Wash	Sun Valley Pkwy-31	77.51	95.92	-18.41	1989
990146	Wash	Sun Valley Pkwy-32	77.51	95.92	-18.41	1989
7664	Wash	Sun Valley Pkwy-33	77.51	80.54	-3.03	1989
7665	Wash	Sun Valley Pkwy-34	77.51	80.54	-3.03	1989
7666	Wash	Sun Valley Pkwy-35	76.45	76.45	0.00	1989
990147	Wash	Sun Valley Pkwy-36	77.51	95.92	-18.41	1989
7667	Wash	Sun Valley Pkwy-37	77.51	77.51	0.00	1989
7668	Wash	Sun Valley Pkwy-38	77.51	77.51	0.00	1989
990148	Wash	Sun Valley Pkwy-39	77.51	95.92	-18.41	1989
990149	Wash	Sun Valley Pkwy-40	77.51	95.92	-18.41	1989
990150	Wash	Sun Valley Pkwy-41	77.51	95.92	-18.41	1989
7669	Wash	Sun Valley Pkwy-42	77.51	80.54	-3.03	1989
7670	Wash	Sun Valley Pkwy-43	77.51	80.54	-3.03	1989
7671	Wash	Sun Valley Pkwy-44	76.45	80.54	-4.09	1989
7672	Wash	Sun Valley Pkwy-45	77.51	77.51	0.00	1989
7673	Wash	Sun Valley Pkwy-46	77.51	77.51	0.00	1989
990189	Wash	Sun Valley Pkwy-47	77.51	77.51	0.00	1989
990190	Wash	Sun Valley Pkwy-48	77.51	77.51	0.00	1989
7674	Wash	Sun Valley Pkwy-49	77.51	77.51	0.00	1989
7675	Wash	Sun Valley Pkwy-50	77.51	77.51	0.00	1989
7676	Wash	Sun Valley Pkwy-51	77.51	77.51	0.00	1989
7677	Wash	Sun Valley Pkwy-52	77.51	77.51	0.00	1989
7678	Wash	Sun Valley Pkwy-53	77.51	77.51	0.00	1989
7679	Wash	Sun Valley Pkwy-54	77.51	77.51	0.00	1989
7680	Wash	Sun Valley Pkwy-55	77.51	77.51	0.00	1989
7681	Wash	Sun Valley Pkwy-56	77.51	77.51	0.00	1989
7682	Wash	Sun Valley Pkwy-57	77.51	77.51	0.00	1989
990191	Wash	Sun Valley Pkwy-58	77.51	77.51	0.00	1989
7683	Wash	Sun Valley Pkwy-59	77.51	77.51	0.00	1989
7684	Wash	Sun Valley Pkwy-60	77.51	77.51	0.00	1989
7685	Wash	Sun Valley Pkwy-61	77.51	77.51	0.00	1989
990192	Wash	Sun Valley Pkwy-63	77.51	77.51	0.00	1989
990193	Wash	Sun Valley Pkwy-64	77.51	77.51	0.00	1989
7687	Wash	Sun Valley Pkwy-65	77.51	77.51	0.00	1989
7688	Wash	Sun Valley Pkwy-66	77.51	77.51	0.00	1989
990194	Wash	Sun Valley Pkwy-67	77.51	77.51	0.00	1989
7689	Wash	Sun Valley Pkwy-68	77.51	77.51	0.00	1989

STRUCT #	FEATURES	FACILITY	SUFF RATE 02	SUFF RATE 01	SUFF CHANGE	YEAR CONST
7690	Wash	Sun Valley Pkwy-69	77.51	77.51	0.00	1989
7691	Wash	Sun Valley Pkwy-70	77.51	77.51	0.00	1989
990195	Wash	Sun Valley Pkwy-71	77.51	77.51	0.00	1989
7692	Wash	Sun Valley Pkwy-72	77.51	77.51	0.00	1989
990196	Wash	Sun Valley Pkwy-73	77.51	77.51	0.00	1989
7693	Wash	Sun Valley Pkwy-74	77.51	77.51	0.00	1989
7694	Wash	Sun Valley Pkwy-75	77.51	77.51	0.00	1989
7695	Wash	Sun Valley Pkwy-76	77.51	77.51	0.00	1989
990197	Wash	Sun Valley Pkwy-77	77.51	77.51	0.00	1989
7696	Wash	Sun Valley Pkwy-78	77.51	77.51	0.00	1989
7697	Wash	Sun Valley Pkwy-79	77.51	77.51	0.00	1989
7698	Wash	Sun Valley Pkwy-80	77.51	77.51	0.00	1989
7699	Wash	Sun Valley Pkwy-81	77.51	77.51	0.00	1989
7700	Wash	Sun Valley Pkwy-82	77.51	77.51	0.00	1989
7701	Wash	Sun Valley Pkwy-83	77.51	77.51	0.00	1989
7702	Wash	Sun Valley Pkwy-84	77.51	77.51	0.00	1989
7703	Wash	Sun Valley Pkwy-85	77.51	77.51	0.00	1989
990198	Wash	Sun Valley Pkwy-86	77.51	77.51	0.00	1989
7704	Wash	Sun Valley Pkwy-87	77.51	77.51	0.00	1989
7705	Wash	Sun Valley Pkwy-88	77.51	77.51	0.00	1989

SYNOPSIS OF MCDOT'S BRIDGE PROJECTS

Bridge Projects in the MCDOT FY 2003-2007 TIP

Currently MCDOT has eight bridge and structure projects in the current TIP. These projects include scour protection, replacement, new design and minor modification. See Table 3 below for a list of the projects.

TABLE 3: Bridge Projects in the MCDOT FY 2003-2007 TIP

STATUS	SUFF RATE	FEATURES	FACILITY	LOCATION	IMPROVEMENT
FY 2004	36.33	Avondale Wash	MC-85	0.4 Mi E/O Estrella Parkway	Improve Drainage Underneath Roadway
FY 2003		Sanoki Wash	Chandler Heights Road	0.25 E/O Sossaman Rd	Replace Dip Crossing W/ New Bridge (design only)
FY 2006		Eastern Canal	Chandler Heights Road	0.25 Mi W/O Gilbert Rd	Replace Pipe With Box Culvert
FY 2004		Eastern Canal	Queen Creek Road	0.5 Mi E/O Gilbert Road	Replace Pipe With Box Culvert
FY 2004	98.69	Hassayampa River	Old US80 - FAS 415	500' E/O Salome Hwy	Scour Protection
FY 2005	96.84	Gila River	Tuthill Road	At the Gila River	Scour Protection
FY 2005	94.22	Salt River	Alma School Road	McClelland Road to North Bridge	Widen the South Bridge
FY 2005	83.10	Salt River	Alma School Road	300' S/O McKellips Rd	North - Grade Control Structure

Bridges & Structures Eligible for Federal Replacement Funds (Sufficiency Rating Less Than 50)

The Federal Highway Administration guidelines stipulate that when a bridge's sufficiency rating falls below a score of 50, the bridge becomes eligible for federal replacement funds. In 2002 the sufficiency rating for the Gillespie Dam Bridge rose from a 48.80 to a 51.40. Therefore for the next year this structure is removed from the eligible list for Federal Replacement Funds. There were however, two other structures that received a sufficiency rating of less than 50. One structure is currently under construction and the other should go to construction in early 2003.

TABLE 4: Bridges & Structures Eligible for Federal Replacement Funds

STRUCT #	FEATURES	FACILITY	SUFF RATE 02	SUFF RATE 01	SUFF CHANGE	YEAR CONST
9154	Queen Creek	Power Road	47.17	51.50	-4.33	1955
7819	Agua Fria	MC 85 – FAS 371	36.33	83.90	-47.57	1973

Bridges & Structures Eligible for Federal Rehabilitation Funds (Sufficiency Rating Between 50 and 80)

The Federal Highway Administration guidelines stipulate that when a bridge's sufficiency rating falls between a score of 50 and 80, the bridge becomes eligible for federal rehabilitation funds. There are 108 facilities in MCDOT's inventory that have sufficiency ratings between 50 and 80. All of the 87 facilities along the Sun Valley Parkway fall between 50 and 80. Although these 87 facilities are eligible for federal rehabilitation funds, they are not presently in a condition that would warrant repair. We will continue to monitor these as well as all structures each inspection cycle. If adverse deterioration continues or increases, remedial action will be considered.

The mere drop in sufficiency rating, because of the multitude of components included in calculating a sufficiency rating, does not necessarily constitute a need for remedial action. The key to a sufficiency rate drop is what component caused the drop. Additional traffic crossing a facility will lower the sufficiency rating as well as a structural defect. Additional traffic would not result in a need for remedial action whereas a structural defect may. Therefore, after each inspection cycle the Bridge Engineer or his designee pays specific attention to all facilities that have a decrease in sufficiency rating to determine what component(s) were involved. Remedial action will be taken when and if necessary. The following Table 5 is a list of bridges and structures in MCDOT's inventory that have sufficiency ratings between 50 and 80. Table 5 does not include the 87 facilities along the Sun Valley Parkway. Please refer back to Table 2 for the list of the Sun Valley Parkway facilities.

TABLE 5: Bridges & Structures Eligible for Federal Rehabilitation Funds

STRUCT #	FEATURES	FACILITY	SUFF RATE 02	SUFF RATE 01	SUFF CHANGE	YEAR CONST
10106	New River	New River Road	78.93	79.82	-0.89	1997
9825	Cave Creek Wash	Carefree Hwy WB	79.92	79.92	0.00	1983
990164	Drainage Ditch	Cotton Ln Fas-295	75.04	75.4	-0.36	1940
990169	Drainage Ditch	El Mirage Road	68.87	69.0	-0.13	1979
990118	Powerline Floodway	Ellsworth Road	78.13	79.12	-0.99	1968
8041	E. Maricopa Floodway	1/3 mi W/O Higley	62.92	80.40	-17.48	1978
990121	RWCD Canal	Queen Creek Road	73.09	71.6	+1.49	1969
8570	Drainage Ditch	RH Johnson Blvd	67.93	69.5	-1.57	1979
990182	Drainage Ditch	RH Johnson Blvd	78.72	78.72	0.00	1979
9735	Drainage Ditch	Bell Road	78.00	78.00	0.00	1981
9126	Drainage Ditch	Bell Road	74.66	76.86	-2.20	1964
990123	Drainage Ditch	MC-85	78.83	78.97	-0.14	1936
990199	Lateral 23 (Grand Canal)	Thomas Road	77.17	77.49	-0.32	1982
9375	Tempe Canal	Broadway Rd EB	74.14	75.23	-1.09	1981
9384	Tempe Canal	Broadway Rd WB	74.14	75.23	-1.09	1966
8021	Gila River	S/O Gillespie Dam	51.40	48.80	+2.60	1927
990178	Tailwater Ditch	Litchfield Road	74.55	74.55	0.00	1955
9145	Agua Fria River	Indian School Rd	66.89	73.91	-7.02	1970
990111	Signal Butte Floodway	Ellsworth Road	79.52	80.80	-1.28	1983
9412	RID Canal	0.5 mi S/O Indian School Road	73.52	73.50	+0.02	1961
7982	Tempe Canal	2.6 mi E/O El Mirage	70.30	70.30	0.00	1931

Bridge & Structure Projects in the Current Project Pool

Currently MCDOT has 10 bridge or structure projects in the project pool. These projects are re-scored each year along with new bridge and structure projects. Top scoring projects will advance to their next respective level (i.e. CAR to DCR, DCR to Design or Construction, and Design to Construction). The following Table 6 is a list of the bridge/structure pool projects

TABLE 6: Bridge & Structure Projects in the Current Project Pool

STATUS	ON ROAD	AT LOCATION	BRIDGE TOTAL PTS	REPORT	PROJECT DESCRIPTION	STATUS	SUPERVISOR DISTRICT
Scored / Idle	Hawes Rd	Sanokai Wash	1.78	CAR	Replace a low water crossing with a Bridge.	CAR	District 1 – Brock
Scored / Idle	Ocotillo Rd	Eastern Canal	0.91	CAR	Install New Box Culvert To Accommodate The Ultimate Roadway Cross Section.	CAR	District 1 – Brock
Scored / Idle	Riggs Rd	Sanokai Wash	2.21	CAR	Replace A Low Water Crossing With A Five Lane Bridge	CAR	District 1 – Brock
Tip For Design	Gilbert Rd	Salt River	25.00	DCR	Replace Bridge And Adjacent Low Water Crossing With A 6-Lane Bridge.	Design	District 2 – Stapley & District 5 - Wilcox
Tip For Design	McKellips Rd	Salt River	8.45	DCR	Replace Low Water Crossing With A 6-Lane Bridge.	Design	District 2 – Stapley & District 5 - Wilcox
Tip For Design	Chandler Heights Rd	Eastern Canal	13.64	DCR	Install New Box Culvert To Accommodate The Ultimate Roadway Cross Section.	Design	District 1 – Brock
Tip For Design	Chandler Heights	Sanokai Wash	7.80	CAR	Replace A Low Water Crossing With A Four-Barrel Reinforced Concrete Box Culvert.	Design	District 1 – Brock
In TIP	Queen Creek Rd	Eastern Canal	25.91		Replace Pipe Crossing With a New Box Culvert	TIP	District 1 – Brock
In TIP	Gilbert Rd	Eastern Canal	23.32	CAR	Install New Box Culvert To Accommodate The Ultimate Roadway Cross Section.	TIP	District 1 – Brock
Scored / Idle	Guadalupe Rd	Eastern Canal	8.10	CAR	Construct a U-Shape Channel And Replace Pipe With A Box Culvert. CAR Recommends DCR Due To Complexity. ("High-Cost" Alternative Scored).	CAR	District 2 – Stapley

Status of Bridge/Structure Projects Completed in FY 2002 (July 1, 2001 - June 30, 2002)

Five bridge/structure projects (new structures or scour protections) were completed in FY 2002. Please refer to Table 7, below, for a list of those projects.

TABLE 7: Bridge/Structure Projects Completed in FY 2002

STRUCT NUMBER	NAME	FACILITY	ORIG CONST DATE
10370	Clearview Road	at Estrella Freeway – Loop 303 (new bridge)	2002
10371	Mountain View Road	At Estrella Freeway – Loop 303 (new bridge)	2002
10368	129 th Avenue	Drainage Channel N/O Camelback Rd.	2001
990224	Dysart Road	Drainage Channel N/O Camelback Rd.	2001
10277	El Mirage Road	Drainage Channel N/O Camelback Rd.	2001

Status of Bridge & Structure Projects Currently Under Construction

There are two bridge projects currently in various stages of construction and numerous structure projects within the Anthem community currently under construction and others completed but not yet in the current inventory. Table 8 is a list of these bridge projects.

TABLE 8: Bridge & Structure Projects Currently Under Construction

STRUCT #	STATUS	NAME	FACILITY	LENGTH
Pending	Under Construction	Deer Valley Road	New River	268 ft.
Pending	Under Construction	Power Road	Queen Creek Wash	193 ft.

Status of Bridge & Structure Projects Currently Being Designed

There are currently four bridge projects in various stages of design. Table 9 is a list of these bridge projects.

TABLE 9: Bridge & Structure Projects Currently Being Designed

NAME	FACILITY	STATUS
Chandler Heights Rd	Sanokai Wash	In House DCR
Queen Creek Rd	Eastern Canal	In House design
Estrella Fwy – Loop 303	Agua Fria River	Design by Consultant
Power Road	4 various locations	In House design

OVERALL BRIDGE INVENTORY LIST

Table 10 is an alphabetical list of all the bridges and structures in the MCDOT Bridge Inventory Database.

TABLE 10: Bridge Inventory List

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
103rd Ave NB	990154	Drainage Ditch	200' N/ Olive	96.77
116 th Avenue	10163	Gila River	0.75 mi S/ Southern Ave	99.85
129 th Avenue	10368	Drainage Channel	N/ Camelback Rd	96.96
138 th Ave	7561	Drainage Ditch	200' W/ Camino del Sol	96.92
141 st Ave	990202	Drainage Ditch	200' W/ Yosemite Dr	96.92
145 th Ave	990203	Drainage Ditch	200' W/ Yosemite Dr	96.92
147 th Ave	990204	Drainage Ditch	200' E/ Antelope	96.89
163 rd Ave	8571	CAP Canal	5 mi N/ US 60	94.19
164 th Street	10102	Drainage Ditch	S Riggs Rd 0.5 mi W/ Higl	97
51st Ave	990201	Drainage Ditch	N/ Baseline	94.59
59th Ave	8583	RID Canal	0.5 mi S/ Buckeye Rd	98.87
75th Ave	8003	RID Canal	0.5 mi N/ Buckeye	96.58
7th St	10050	Desert Lake Wash	0.2 mi N/ 7th St/Carefree	96.15
7th St	10051	Desert Lk Wash S Branch	450' N/ Carefree Hwy	96.15
84th Way	990103	Drainage Ditch	N/ Broadway Rd	97
85th St	990104	Drainage Ditch	N/ Broadway Rd	96.55
90th St	8984	Drainage Ditch	N/ Broadway Rd (Mesa)	99.32
91st Ave	9685	Grand Canal	Bethany Home Rd	95.39
91st Ave	9289	RID Canal	@ McDowell Rd	81.2
99th Ave	9672	RID Canal	0.5 mi N/ McDowell Rd	92.66
99th Ave	990151	Drainage Ditch	150' N/ Grand	81.67
99th Ave	990153	Drainage Ditch	@ Concho Circle	80.93
99th Ave NB	9666	Drainage Ditch	250' N Grand Ave	95.54
99th Ave; Median	9687	Drainage Ditch	Boswell	97.97
99th Ave; Median	9688	Drainage Ditch	Burns Dr	97.97
99th Ave; Median	9668	Drainage Ditch	@ Hutton Drive	97.97
99th Ave; Median	9686	Drainage Ditch	@ Bell Rec Ctr Drive	94.02
99th Ave; Median	9669	Drainage Ditch	Royal Oak Rd	94.02
99th Ave; Median	9689	Drainage Ditch	@ Cameo Dr	83.66
99th Ave; Median	9670	Drainage Ditch	Royal Ridge Rd	82.58
Access Ramp(SVP)62	7686	Wash X-ing Access Ramp	14.9 mi N/ McDowell Rd	96.99
Agua Caliente Rd	990156	Gila River Branch	8.5 mi N/ I 8 Frwy	95.91
Agua Caliente Rd	7548	Gila River	8 mi N/ I 8 Frwy	85.55
Airport Rd	10126	Buckeye Canal	1 mi N/ MC85	98.84
Airport Rd	8001	RID Canal	0.5 mi N/ Lower Buckeye	94.93
Aleppo Drive	7549	Drainage Ditch	200' N/ 136th Drive	96.98
Alma School Rd	990117	golf cart underpass	0.5 mi S/ Riggs Rd	95.89
Alma School Rd	8554	Salt River(S.Channel)	0.25 mi N/ McClellan	94.22
Alma School Rd	8553	Salt River (N.Channel)	300' S/ McKellips	83.1
Apache Blvd	7982	Tempe Canal	2.6 mi W/ Jct SR 87	70.3

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Baseline Rd	8000	Buckeye Canal	100' W/ MC-85	93.59
Baseline Rd	990216	Pedestrian Xing	@ 116th Ave at PIR	84.91
Beardsly Rd	8555	Drainage Ditch	100' E/ 125th Ave	96.21
Bell Rd	7641	Beardsly Canal	1.5 mi W/ Cotton Lane	91.61
Bell Rd	9735	Drainage Ditch	@ 115th Ave	78
Bell Rd	9126	Drainage Ditch	@ 99th Ave	74.66
Beloat Rd	990157	Buckeye Canal S. Branch	E/ Rainbow Rd	89.12
Broadway Rd	990102	Drainage Ditch	1000' E/ Crismon Rd	95.58
Broadway Rd	8975	Drainage Ditch	400' W/ CAP Canal	92.79
Broadway Rd	990101	Drainage Ditch	at Meridian Rd.	92.77
Broadway Rd EB	9375	Tempe Canal	0.2 mi E/ Price Rd	74.14
Broadway Rd WB	9384	Tempe Canal	0.2 mi E/ Price Rd	74.14
Bruner Rd	8855	Buckeye Canal	0.75 mi N/ Old US 80	98.99
Bullard Rd	8008	RID Canal	1 mi S/ Indian School	97.98
Bush Hwy	990113	Wash	3.5 mi N/ McDowell Rd	97.72
Bush Hwy	9824	CAP Canal	3 mi N/ McDowell Rd	97.15
Bush Hwy	9763	Spook Hill Fldwy	3 mi N/ McDowell Rd	86.38
Bush Hwy-FAS 388	7779	Wash	3.5 mi N/ McDowell Rd	96.57
Bush Hwy-FAS 388	9849	Salt River	@ Blue Point	92.62
Camelback Rd	9859	Agua Fria River	1.0 mi E/ El Mirage Rd	82.84
Camelback Rd	990158	Agua Fria River Branch	0.75 mi E/ El Mirage Rd	81.3
Campbell Ave	10241	Wash	W/ Jackrabbit Trl	97
Carefree Highway	10158	Wash	W/ 16th Street	96.79
Carefree Highway	10159	Wash	0.5 mi W/ 24th Street	96.79
Carefree Highway	10160	Wash	0.25 mi E/ 24th Street	96.79
Carefree Highway	10161	Wash	0.5 mi E/ 24th Street	96.79
Carefree Hwy	9893	Wash	200' W/ 24th St	85
Carefree Hwy	9892	Wash	200' W/ 12th St	85
Carefree Hwy	9891	Wash	@ 10th St	85
Carefree Hwy EB	10162	Cave Creek Wash	1 mi W/ Cave Creek Rd	96.79
Carefree Hwy WB	9825	Cave Creek Wash	1 mi W/ Cave Creek Rd	79.92
Cavalcade Drive	7550	Drainage Ditch	200' E/ 141th Ave	98.55
Cave Creek PKWY	7898	Wash	0.5 mi E/ 32nd St	87.46
Chambers Street	10240	Buckeye Feeder Ditch	0.6 mi S/ Broadway Rd	99
Chandler Hts	9409	E. Maricopa Fldwy	100' E/ Greenfield	95.62
Chandler Hts Rd	990116	Consolidated Canal	0.5 mi E/ SR-87	97.9
Circle Mtn Road	10084	Wash	3437' E/ New River Rd	85.63
Citrus Road	10229	Wash	just N/ Northern Ave	81.9
Citrus Rd	8006	RID Canal	N/ Van Buren	92.85
Clearview Rd	10370	Estrella Frwy-303	at Estrella Frwy - Loop 3	-1

Bridge Management System

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Conquistador Dr	990163	Drainage Ditch	200' S/ Beechwood	96.99
Conquistador Dr	990162	Drainage Ditch	200' E/ Regal	86.99
Corabell Ave	990107	Drainage Ditch (Wash)	E/ Ellsworth	96.98
Cotton Lane	8717	Buckeye Canal	1000' S/ MC-85	98.57
Cotton Lane	9133	RID Canal	0.5 mi N/ Van Buren	82.22
Cotton Lane	990164	Drainage Ditch	N/ Camelback Rd	75.04
Cottonwood Rd	10062	Cottonwood Creek	N Entrance Lk Plsnt Pk	95
Courthouse Rd	9736	Saddleback Diversn Chn	3 mi W/ Salome Rd	98.73
Crismon Rd	8856	CAP Canal	500' N/ Apache Rd	94.23
Crismon Rd	8761	Signal Butte Fldwy	0.5 mi N/ Brown Rd	84.04
Crozier Rd	8647	CAP Canal	1 mi S/ Patton	99.95
Dean Rd	8638	Buckeye Canal	0.75 mi N/ SR 85	98.93
Dean Rd	7551	RID Canal	600' N/ Lower Buckeye Rd	98.92
Deer Valley Dr	990165	Golf Cart Path	W/ Dustytrail Blvd (SCW)	96.33
Deer Valley Dr	990166	Golf Cart Path	E/ Veterans	96.33
Deer Valley Dr	990167	Golf Cart Path	0.5 mi W/ Vertans (SCW)	96.33
Deer Valley DR	10044	Golf Cart Path (SCW)	W/ 135th Ave	96.33
Deer Valley Rd	7553	Wash	2.8 mi SW/ Grand Ave	97.86
Deer Valley Road	10238	Drainage Ditch	Just E/ 83rd Ave	80.63
Del Webb Blvd	9676	Drainage Ditch	Boswell	96.16
Del Webb Blvd	9677	Drainage Ditch	105th Ave	96.16
Del Webb Blvd	9678	Drainage Ditch	106th Ave	96.16
Del Webb Blvd	9679	Drainage Ditch	107th Ave	96.16
Desert Glen Dr	990168	Drainage Ditch	100' N/ 132nd Ave	82.95
Dysart Rd	990224	Drain Chnl	N/ Camelback Rd	93.27
Dysart Rd	9412	RID Canal	0.5 mi S/ Indian School	73.52
Dysart Rd-FAS 547	7883	Colter Channel	0.25 mi N/ Camelback Rd	96.51
Eagle Eye Rd	8560	CAP Canal	2 mi S/ Salome Rd	97.84
El Mirage Rd	9949	Dysart Drain	0.5 mi N/ Glendale Ave	98.39
El Mirage Rd	7884	Colter Channel	0.25 mi N/ Camelback Rd	98.17
El Mirage Rd	8561	Drainage Ditch	N/ Bell Rd	96.31
El Mirage Rd	10277	Drainage channel	N/ Camelback Rd	95.75
El Mirage Rd	990169	Drainage Ditch	0.25 mi S/ Beardsley	68.87
Elliot Rd	9586	Sossaman Ditch	@ Sossaman	95.35
Elliot Rd-FAS 235	7778	Eastern Canal	0.25 mi E/ Greenfield	97.92
Ellsworth Rd	9895	CAP Canal	0.25 mi N/ University Rd	97.37
Ellsworth Rd	9138	Sonoqui Wash	@Pinal Co Line (Riggs Rd)	92.38
Ellsworth Rd	990111	Signal Butte Floodway	Brown Rd	79.52
Ellsworth Rd	990118	Powerline Floodway	2 mi S/ Elliot Rd	78.13

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Ellsworth-FAU 7077	7899	Wash	400' N/ Broadway	94.41
Ellsworth-FAU 7077	7900	Wash	400' S/ University	94.41
Ellsworth-FAU 7077	9842	Drainage Ditch	200' S/ Apache Trail	94.41
Estrella Roadway	10220	Grand Ave & BNSF Rlrd	Grand Ave & BNSF Rlrd	-1
Florian St	990109	Drainage Ditch	E/ Ellsworth	96.7
Forest Rd	10367	Small Wash	1.4 mi N/ McDowell Mtn Rd	99.92
Forest Rd	10366	Large Wash	1.3 mi N/ McDowell Mtn Rd	97.92
Forest Road	990223	golf cart crossing	1.3 mi N/McDowell Mtn Rd	99.98
Fort McDowell Road	10104	Wash	just N/ Yavapai Rd	95.37
Gemstone Drive	7554	Drainage Ditch	200' N/ 136th Drive	96.94
Germann Road	10276	Drainage channel	.25 mi E/ Sossaman Rd	96.02
Germann Road	10087	Eastern Canal	0.25 mi W/ Lindsay Rd	95.14
Gilbert Rd-FAS 229	7780	Salt River	0.5 mi N/ Thomas Rd	87.17
Glenmar Rd	990106	Drainage Ditch	N/ Broadway Rd	85.35
Granite Valley Dr	990170	Drainage Ditch	200' N/ Antelope Dr (SCW)	96.55
Greenway Rd	8562	Drainage Ditch	@ 99th Ave	99.25
Greenway Rd	8858	Beardsley Canal	1 mi W/ Citrus Rd	98.95
Hawes Rd	7818	Queen Creek Wash	N/ Ocotillo Rd	98.85
Higley Rd	9504	E. Maricopa Fldwy	0.5 mi S/ Germann	97.21
Higley Rd	9503	RWCD Canal	0.5 mi S/ Germann	91.15
Higley Road	10103	Drainage Ditch	just S/ Riggs Rd	96.52
I 17 Frontage Rd	8640	Wash	0.7 mi S/ New River	96.55
I 17 Frontage Rd	10085	New River	1000' S/ New River Rd	94.28
I-17 Frontage Rd	990114	Wash	0.6 mi N/ New River Rd	84.71
Indian School Rd	990174	Wash	300' E/ 411th Ave	96.93
Indian School Rd	990172	Beardsley Canal	@ 191st Ave	93.62
Indian School Rd	8564	Wash	1 mi E/ 411th Ave	92.06
Indian School Rd	990173	Lateral 23 (Grand Canal)	@ 99th Ave	91.59
Indian School Rd	9145	Agua Fria River	0.5 mi E/ El Mirage	66.89
Indian Springs Rd	990225	Wash	W/ El Mirage Rd	96.87
Jackrabbit Rd	990175	Buckeye Canal S. Branch	0.25 mi S/ SR-85	98.5
Jackrabbit Trail	9831	Buckeye Canal	1000' N/ Southern Ave	98.46
Jackrabbit Trail	10088	RID Canal	0.25 mi N/ Yuma	97.45
Johnson Rd	8680	RID Canal	0.25 mi N/ Broadway	98.9
Johnson Rd	7582	Buckeye Canal	300' S/ River Rd	94.95
Jomax Road	10274	Wash	.25 mi W/ Grand Ave	96.96
Lake Pleasant Rd	10086	Wash	100' E/ I 17 Frontage	86.61
Lindsay Rd	990210	Eastern Canal	0.25 mi N/ Germann Rd	96.25
Litchfield Rd	990178	Tailwater Ditch	@ Waddel Rd	74.55

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Lk Pleasant Acc Rd	8565	Wash	1 mi N/ SR 74	97.85
Lk Pleasant Acc Rd	990176	Wash	100' E/ Castle Hot Spr Rd	90.87
Lk Pleasant Acc Rd	990177	Wash	0.2 mi E/ Castle HSpr Rd	90.87
Lone Mountain Rd	10052	Wash	0.75 mi E/ 227th Ave	98.97
Lone Mountain Rd	10053	Wash	0.65 mi E/ 227th Ave	98.97
Lower Buckeye Rd	7556	AFR Diversion Channel	1 mi W/ El Mirage Rd	98.67
Main Street	10245	Wash	W/ 2nd St - Gila Bend	99.77
Main Street	10246	Wash	E/ 2nd St - Gila Bend	86.61
MC 85 Hwy-FAS 371	7901	Buckeye Canal	0.5 mi N/ Southern	97.74
MC-85	10230	Bullard Wash	0.3 mi E/ Estrella Pkwy	97.91
MC-85	990129	Drainage Ditch	E/ Cotton Lane	96.16
MC-85	990127	Drainage Ditch	0.5 mi W/ Sarival	95.15
MC-85	990219	Dirt Irr Ditch	335' W/ Estrella Pkwy	91.11
MC-85	990220	Dirt Irr Ditch	0.3 mi W/Estrella Pkwy	91.11
MC-85	990128	Drainage Ditch	0.25 mi E/ Cotton Lane	84.02
MC-85	990215	Buckeye Canal S Branch	Just E/ Perryville Rd	82.98
MC-85	990214	Buckeye Canal S Branch	0.25 mi NE/ Baseline/ Perr	82.98
MC-85	990123	Drainage Ditch	0.25 mi E/ 107th Ave	78.83
MC-85 Hwy-FAS 371	7819	Agua Fria River	0.5 mi W/ El Mirage	36.33
McDowell Rd	7583	Wash	W/ Jackrabbit Trail	99.72
McDowell Rd	990133	Drainage Ditch	E/ Sun Valley Pkwy	96.81
McDowell Rd	9421	RID Canal	W/ Reem Rd (Estrella Pkwy	93.26
McDowell Rd	8019	Wash	2.25 mi N/ SR 87	84.6
McKellips Road	10105	Granite Reef Wash	0.5 mi E/ I 17	96.3
Meadowbrook Ave	10242	Wash	W/ Jackrabbit Trail	97
Meadowbrook Rd	8980	Lateral 23 (SRP)	0.5 mi N/ Indian School Rd	94

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Meeker Blvd	990179	Golf Cart Underpass	0.75 mi W/ RH Johnson	94.64
Meeker Blvd	8797	Drainage Ditch	0.5 mi W R H Johnson Rd	94.64
Meridian Rd	990217	Drainage Ditch	1/8 mi N/ University	96.57
Meridian Rd	10108	Wash	0.25 mi N/ McKellips Rd	96.14
Meridian Rd	7557	Bulldog Floodway	0.5 mi N/ Brown Rd	84.5
Miller Rd	9424	RID Canal	0.5 mi N/ Broadway	91.41
Miller Rd	9593	Buckeye Canal	0.5 mi N/ SR 85	87.52
Mountain Rd	7784	Powerline Floodway	1.75 mi S/ Elliot Rd	97.82
Mountain View Rd	10371	Estrella FrwyLoop303	at Estrella Frwy - Loop 3	-1
New River Rd	7643	Wash	0.25 mi E/ 27th Ave	99.31
New River Rd	7642	Wash	At 29th Ave	98.96
New River Rd	10021	Skunk Creek	0.25 mi W/ 7th Ave	93.05
New River Rd	990213	Wash	S/ Meander Rd	86.05
New River Rd	8011	Wash	0.25 mi E/ I 17	81.63
New River Road	10083	Cline Creek Wash	350' N/ Circle Mtn Rd	91.31
New River Road	10106	New River	0.25 mi E/ I 17	78.93
Northern Ave	10243	New River	W/ 99th Ave	97.9
number available	990218	Drainage Ditch		-1
Old US 80	8023	Arlington Valley Wash	1 mi S/ Arlington Sch Rd	94.89
Old US 80 Hwy	8025	Arlington Valley Wash	0.25 mi N/ 331th Ave	95.82
Old US 80 Hwy	10061	Arlington Valley Wash	0.3 mi S/ 331th Ave	89.76
Old US 80 Hwy	8021	Gila River	S/ Gillespie Dam	51.4
Old US 80-FAS 415	9834	Buckeye Drain	1 mi W/ Jct SR-85	98.8
Old US 80-FAS 415	9999	Hassayampa River	500' E/ Salome Hwy	98.69
Old US-80	990208	Arlington Valley Wash	1.25 mi S/ Cactus Rose	99.94
Old US-80	990155	Buckeye Lateral	0.5 mi W/ Palo Verde Rd	98.9
Old US-80	990180	Arlington Valley Wash	50' S/ Cactus Rose	98.67
Old US-80	990205	Arlington Valley Wash	0.75 mi S/ Cactus Rose	96.74
Old US-80	990206	Arlington Valley Wash	7/8 mi S/ Cactus Rose	96.74
Old US-80	990207	Arlington Valley Wash	1 mi S/ Cactus Rose	96.74
Old US-80	990209	Arlington Valley Wash	1.5 mi S/ Cactus Rose	96.74
Old US-80	990181	Arlington Valley Wash	0.25 mi S/ Cactus Rose	91.72
Olive Ave	8981	Agua Fria River	0.8 mi E/ El Mirage Rd	96.42
Olive Avenue	9588	New River	E/ of 99th Ave	93.53
Palo Verde Rd	7782	Buckeye Canal	0.75 mi N/ Old US80 Hwy	98.82
Palo Verde Rd	9426	RID Canal	0.25 mi N/ Broadway	98.46
Patton Rd	8569	CAP Canal	1 mi W/ US 60	94.43
Pecos Rd	8045	Eastern Canal	W/ Lindsay	93.27
Peoria Ave-FAU7033	9427	New River	0.25 mi E/ 99th Ave	81.64
Perryville Rd	8043	RID Canal	1/3 mi S/ Van Buren	98.94

Bridge Management System

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Perryville Rd	8044	Buckeye Canal	0.5 mi N/ Southern	98.93
Power Rd	9927	RWCD Canal (N. Crossing)	S/ Guadalupe Rd	95.54
Power Rd	9928	East Maricopa Fldwy	S/ Guadalupe Rd	81.81
Power Rd	9154	Queen Creek	0.2 mi S/ Queen Creek Rd	47.17
Power Road	10107	Drainage Ditch	just S/ Chandler Hts Rd	82.53
Queen Creek Rd	990121	RWCD Canal	0.3 mi W/ Higley	73.09
Queen Creek Rd	8041	E. Maricopa Floodway	1/3 mi W/ Higley	62.92
Rainbow Rd	8681	RID Canal	1 mi N/ Broadway	98.66
Rainbow Rd	8040	Buckeye Canal	0.25 mi N/ SR 85	87.61
RH Johnson Blvd	990182	Drainage Ditch	100' E/ 132nd Ave	78.72
RH Johnson Blvd	8570	Drainage Ditch	N/ Bell Rd	67.93
Riggs Rd	990212	RWCD	1 mi W/ Higley (W/ EMF)	95.89
Riggs Road	10101	E. Maricopa Fldwy	1 mi W/ Higley	98.89
Rittenhouse Rd	8038	Queen Creek Wash	0.25 mi N/ Cloud	92.34
Roeser Rd	10239	Buckeye Feeder Ditch	0.5 mi S/ Broadway Rd	99
Salome Rd	9832	CAP Canal	8 mi W/ Harquahala Val Rd	94.84
Santa Fe Drive	10244	Beardsley Canal	E/ 163rd Ave & Grand Av	99
Sarival Rd	8037	RID Canal	S/ McDowell	98.88
Signal Butte Rd	8982	Drainage Ditch	N/ Broadway Rd	93.85
Signal Butte Rd	990112	Signal Butte Floodway	0.5 mi N/ Brown Rd	90.65
Southern Ave	990211	Buckeye Canal S Branch	0.5 mi E/ SR-85	98.74
Southern Ave	8884	CAP Canal	0.75 mi W/ Meridian Ave	96.84
Southern Ave	990108	Drainage Ditch	E/ Ellsworth	95.72
Southern Ave	7716	CAP Drainage Channel	500' W/ CAP Canal	95.72
Southern Ave	990221	Drainage Ditch	Just E/ Crismon Rd	88.77
Southern Ave	990222	Drainage Channel	0.5 mi E/ Crismon Rd	81.33
Spanish Garden Dr	8573	Drainage Ditch	200' E/ 132nd Ave	97.49
Stardust Blvd	990183	Drainage Ditch	200' W/ Yosemite Rd	95.87
Stardust Blvd Med	990184	Drainage Ditch	@ Aurora Dr (SCW)	97.25
Stardust Blvd Med	990185	Drainage Ditch	@ Ballard Dr	97.25
Stardust Blvd Med	990186	Drainage Ditch	@ Skylark Dr	97.25
Stardust Blvd NB	990187	Drainage Ditch	200' N/ Amigo Dr (SCW)	88.68
Sun Valley Pkwy	7644	McMicken Dam Channel	300' W/ McMicken Dam	84.75
Sun Valley Pkwy-01	7645	Wash	0.7 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-02	7646	Wash	0.8 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-03	7647	Wash	1.3 mi N/ McDowell Rd	76.45
Sun Valley Pkwy-04	7648	Wash	1.5 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-05	7649	Wash	1.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-06	7650	Wash	2.0 mi N/ McDowell Rd	78.45
Sun Valley Pkwy-07	7651	Wash	2.5 mi N/ McDowell Rd	77.51

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Sun Valley Pkwy-08	7652	Wash	2.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-09	7653	Wash	2.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-10	990134	Wash	2.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-11	7654	Wash	3.3 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-12	7655	Wash	3.4 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-13	7656	Wash	3.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-14	990135	Wash	3.7 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-15	990136	Wash	4.2 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-16	7657	Wash	4.4 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-17	7658	Wash	4.5 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-18	7659	Wash	4.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-19	990137	Wash	4.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-20	990138	Wash	5.0 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-21	7660	Wash	5.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-22	7661	Wash	5.3 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-23	990139	Wash	5.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-24	7662	Wash	6.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-25	7663	Wash	6.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-26	990140	Wash	6.4 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-27	990141	Wash	6.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-28	990142	Wash	6.7 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-29	990143	Wash	6.8 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-30	990144	Wash	7.0 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-31	990145	Wash	7.2 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-32	990146	Wash	7.3 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-33	7664	Wash	7.3 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-34	7665	Wash	7.4 mi N/ McDowell Rd.	77.51
Sun Valley Pkwy-35	7666	Wash	7.4 mi N/ McDowell Rd	76.45
Sun Valley Pkwy-36	990147	Wash	7.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-37	7667	Wash	8.0 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-38	7668	Wash	8.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-39	990148	Wash	8.5 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-40	990149	Wash	8.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-41	990150	Wash	8.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-42	7669	Wash	9.2 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-43	7670	Wash	9.2 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-44	7671	Wash	10.0 mi N/ McDowell Rd	76.45
Sun Valley Pkwy-45	7672	Wash	10.2 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-46	7673	Wash	10.2 mi N/ McDowell Rd	77.51

Bridge Management System

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Sun Valley Pkwy-47	990189	Wash	10.5 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-48	990190	Wash	10.8 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-49	7674	Wash	11.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-50	7675	Wash	11.2 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-51	7676	Wash	11.8 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-52	7677	Wash	11.8 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-53	7678	Wash	11.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-54	7679	Wash	11.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-55	7680	Wash	11.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-56	7681	Wash	11.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-57	7682	Wash	12.0 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-58	990191	Wash	13.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-59	7683	Wash	13.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-60	7684	Wash	14.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-61	7685	Wash	14.3 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-63	990192	Wash	17.7 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-64	990193	Wash	18.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-65	7687	Wash	18.3 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-66	7688	Wash	18.4 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-67	990194	Wash	18.5 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-68	7689	Wash	18.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-69	7690	Wash	18.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-70	7691	Wash	19.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-71	990195	Wash	19.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-72	7692	Wash	19.3 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-73	990196	Wash	19.5 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-74	7693	Wash	19.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-75	7694	Wash	19.7 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-76	7695	Wash	19.7 mi N McDowell Rd	77.51
Sun Valley Pkwy-77	990197	Wash	19.8 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-78	7696	Wash	20.4 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-79	7697	Wash	21.4 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-80	7698	Wash	21.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-81	7699	Wash	22.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-82	7700	Wash	22.5 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-83	7701	Wash	22.6 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-84	7702	Wash	22.9 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-85	7703	Wash	23.4 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-86	990198	Wash	23.6 mi N/ McDowell Rd	77.51

Roadway Carried	Structure #	Feature Intersected	Location	Sufficiency Rating
Sun Valley Pkwy-87	7704	Wash	24.1 mi N/ McDowell Rd	77.51
Sun Valley Pkwy-88	7705	Wash	24.2 mi N/ McDowell Rd	77.51
Sunland Ave	990110	Drainage Ditch	E/ Ellsworth	96.85
Thomas Rd	990199	Lateral 23 (Grand Canal)	@ 99th Ave	77.17
Thunderbird Rd	9683	Drainage Ditch	99th Ave	87.45
Trail Ridge Dr	990200	Drainage Ditch	200' W/ Yosemite Dr	96.66
Turner Rd	8629	Buckeye Canal	0.5 mi S/ Baseline Rd	98.66
Tuthill Rd	8584	Gila River	0.5 mi S/ Beloit Rd	96.84
Union Hills	990152	Drainage Ditch	@ 99th Ave	95.47
University Dr	9374	Tempe Canal	0.7 mi E/ Price Rd	92.96
University Drive	8862	CAP Canal	0.5 mi E/ Ellsworth Rd	98.24
Van Buren St	8881	RID Canal	0.5 mi W/ Citrus Rd	98.89
Van Buren St	7706	Drainage Ditch	E/ Palo Verde Rd	96.87
Van Buren St	8882	Dickey Wash	1 mi W/ 339th Ave	91.15
Via Hermosa	8983	Wash	W/ Forest Rd (Rio Verde)	96.74
Watson Rd	8032	RID	0.5 mi N/ Broadway	97.49
Whitman Drive	10369	Wash	600' E/ Galvin Peak Pkwy	96.98
Wickenburg Rd	8576	CAP Canal	7 mi N/ Indian School Rd	98.1
Wildwood Drive	8577	Drainage Ditch	200' W/ 125th Ave	97.73
Williams Field Rd	8644	E Maricopa Fldwy	500' E/ Power Rd	97.07
Williams Field Rd	10213	RWCD Canal	E/ Power Road	97
Williams Field Rd	7560	Eastern Canal	0.5 mi E/ Lindsay Rd	95.6
Wilson Ave	8578	Buckeye Canal	1 mi S/ Baseline	98.95
Woods Rd	9919	Gila Bend Canal	E/ Old US-80	98.85
Yuma Rd	8029	RID	1 mi W/ Jackrabbit	96.3

RECAPTULATION OF BMS INVENTORY STATUS AS OF OCTOBER 2002

Total number of structures in current inventory:	366
Number of structures requiring Federal Inspections:	259
Number of structures not requiring Federal Inspections:	107
Changes to database not yet accounted for in the above:	
Annexations (will be removed from database in 2002)	0

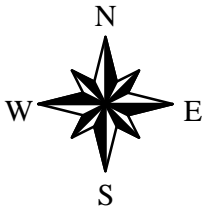
New structures to be added to database in 2002:

- Clearview Road @ Estrella Freeway (Loop 303)
- Mountain View Road @ Estrella Freeway (Loop 303)
- Numerous unnamed washes in the Anthem community
- Loop 303 Grade Separation over Grand Avenue
- Deer Valley Road @ New River
- Power Road @ Queen Creek Wash

Estimated number of structures to be added to database in 2002: 5**

(** This number could significantly increase as the new structures within the Anthem community are accepted). Assuming the above changes occur (excluding Anthem community), the 2002 database could have a total of 371 structures. (366 + 5 additions = 371).

FIGURE 1



Bridges & Culverts Owned by Maricopa County

Structure Type

\$ Bridges

Culverts

